

## Two newly recorded species of the genus *Itaquascon* (Tardigrada; Hypsibiidae) from China

WANG Yi-ting<sup>1</sup>, WANG Li-zhi<sup>1,2\*</sup>

<sup>1</sup>College of Life Sciences, Shaanxi Normal University, Xi'an 710062, P. R. China

<sup>2</sup>Department of Life Sciences, Shaanxi Institute of Education, Xi'an 710061, P. R. China

**Abstract:** This paper reports two newly recorded species, *Itaquascon placophorum* Maucci, 1972 and *Itaquascon umbellinae* Barros, 1939, of the genus *Itaquascon* (Tardigrada; Hypsibiidae) from China in the first time. The specimens of *Itaquascon placophorum* were collected from Tsinling Mountains (33°28'N, 108°29'E) at 2,040 m above the sea level and those of *Itaquascon umbellinae* from Taibai Mt. (34°21'N, 107°39'E) at 1,500 m above the sea level. All specimens are deposited at the College of Life Sciences, Shaanxi Normal University, China.

**Keywords:** tardigrada; taxonomy; new record; China

Over 10 species of the genus *Itaquascon* have been described in the world (Guidetti & Bertolandi 2005). However, this genus has not been reported from China. In this paper, two newly recorded species, *Itaquascon placophorum* Maucci, 1972 and *Itaquascon umbellinae* Barros, 1939 were reported.

### Materials and methods

Tardigrades were extracted from mosses, lichens and pine needles collected from Tsinling Mountains and Taibai Mt., Shaanxi Province. All specimens were mounted in Hoyer's medium on microscope slides and the coverslips were sealed with epoxy paint for identification. Observation and measurements were made using phase contrast microscopy (Nikon 80i, Nikon) and an eyepiece micrometer. Photomicrographs were made by using PCM associated with a digital camera (DS-Fi1, Nikon). *pt* is the percent ratio between the length of a structure and that of buccal tube measured from the medio-dorsal transversal ridge to the base of the pharyngeal apophyses (Pilato 1981). The specimens are deposited at the College of Life Sciences, Shaanxi Normal University, China.

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Biography: WANG Yi-ting (1983-), female, M.A. Candidate, Shaanxi Normal University, Xi'an 710062, P. R. China.

E-mail: wang4451@126.com. Telephone: 029-85308451

\*Corresponding author: WANG Li-zhi, E-mail: rj\_wl@126.com

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### Taxonomic accounts

Class Eutardigrada Richters, 1926

Family Hypsibiidae Pilato, 1969

Genus *Itaquascon* Barros, 1939

*Itaquascon placophorum* Maucci, 1972 (Fig. 1, Table 1)

Material examined: Three specimens were collected from pine needles in Tsinling Mountains (33°28'N, 108°29'E) at 2 040 m above the sea level.

Description: Length from 190.1 µm to 414.4 µm, colorless, eye spots absent, cuticle smooth. A triangular papilla on dorsum near the caudal end. Buccal tube long and straight. Rigid part terminated in a reinforced ring. Flexible portion in all the length well defined spiral-shaped structure. Stylets weak, almost straight, very close to the tube. Stylet supports absent. Pharynx small, elongate, with length to width ratio of about 1.7:1. Apophyses and placoids absent.

The principal branch of every external double claws very slender. The claws of each leg remarkably different in size, the claw bottom with a wide, spine-shaped expansion, the external double claws larger. A long, linear, distinct cuticular bar near base of the internal double claws of the 2nd and 3rd pairs of legs. Accessory points hardly visible on double claws.

Remarks: The cuticular bar in *It. placophorum* often considerably more pronounced than that in the other species of *Itaqzusun*. *It. placophorum* was found in Turkey, Carso, Triestino, Austria and Sweden (Ramazzotti & Maucci 1983). It is the first report of this species from China.

*Itaquascon umbellinae* Barros, 1939 (Figs. 2, 3)

Material examined: One specimen was collected from mosses in Taibai Mt. (34°21'N, 107°39'E) at 1,500 m above the sea level.

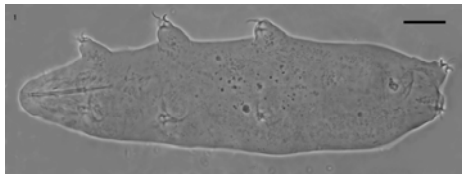
Description: Length up to 288.0 µm, eye spots absent, cuticle smooth. Body rather elongated, the 3rd pair of legs maximum wide, similarly as *It. placophorum*. Buccal tube (length 26.2µm;

width 1.4  $\mu\text{m}$ ,  $pt=5.34$ ) was divided into a rigid part and a flexible part, almost equal in length between the two parts. The wall of flexible part spiral thickening. Stylets weak. Stylet supports short and thin. Stylet supports were inserted at 22.0  $\mu\text{m}$

( $pt=83.97$ ). Pharynx elongate, with length (48.5  $\mu\text{m}$ ,  $pt=185.11$ ) to width (26.1  $\mu\text{m}$ ,  $pt=99.62$ ) ratio of about 1.85 : 1. Apophyses and placoids lacking.

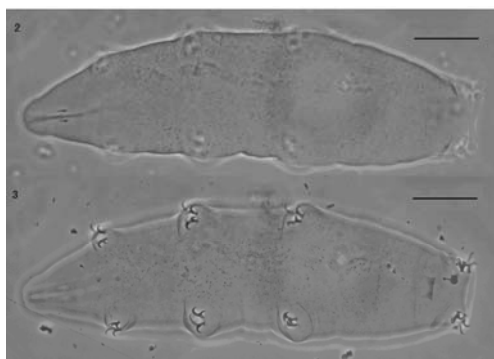
**Table 1.** Measurements of *It. placophorum* from China

Character	Specimen 1		Specimen 2		Specimen 3	
	$\mu\text{m}$	$pt$	$\mu\text{m}$	$pt$	$\mu\text{m}$	$pt$
Body length	414.4		209.9		190.1	
Buccal tube length	27.3		21.1		20.8	
Stylet support insertion point	26.9	98.53	20.2	95.87	19.6	94.23
Buccal tube width	3.3	12.09	1.6	7.59	1.7	8.17
Pharyngeal length	27.4	100.37	20.4	96.82	17.9	8.61
Pharyngeal width	15.2	55.68	12.4	58.85	10.6	50.96
Bucco-pharyngeal tube length	53.7	196.71	33.9	160.89	34.7	166.83
Primary branch length of leg 1 external claw	14.6	53.48	8.8	41.77	10.8	51.92
Secondary branch length of leg 1 external claw	6.2	22.71	5.0	23.73	5.0	24.04
Primary branch length of leg 1 internal claw	9.4	34.43	4.7	22.41	4.6	22.12
Secondary branch length of leg 1 internal claw	6.5	23.81	3.5	16.61	2.7	12.98
Primary branch length of leg 2 external claw	18.0	65.93	11.8	56.00	13.2	63.46
Secondary branch length of leg 2 external claw	5.8	21.25	5.2	24.68	5.5	26.44
Primary branch length of leg 2 internal claw	11.5	42.12	6.1	28.95	5.8	27.88
Secondary branch length of leg 2 internal claw	5.8	21.25	4.2	19.93	2.7	12.98
Primary branch length of leg 3 external claw	19.9	72.89	12.9	61.22	11.1	53.37
Secondary branch length of leg 3 external claw	6.7	24.54	5.6	26.58	5.0	24.04
Primary branch length of leg 3 internal claw	11.9	43.59	7.2	34.17	5.4	25.96
Secondary branch length of leg 3 internal claw	5.8	21.25	3.5	16.61	3.1	14.90
Primary branch length of leg 4 posterior claw	16.3	59.71	13.0	61.70	11.5	55.29
Secondary branch length of leg 4 posterior claw	6.3	23.08	5.4	25.63	5.0	24.04
Primary branch length of leg 4 anterior claw	9.8	35.90	10.1	47.94	6.1	29.33
Secondary branch length of leg 4 anterior claw	6.4	23.44	3.6	17.09	3.1	14.90



**Fig. 1** *Itaquascon placophorum* Maucci, 1972

Habitus focused to show bucco-pharyngeal apparatus and the double claws. Scale bar = 20  $\mu\text{m}$ .



**Figs. 2-3** *Itaquascon umbellinae* Barros, 1939

- Habitus focused to show bucco-pharyngeal apparatus;
- Habitus focused to show the double claws. 2-3. Scale bars=20  $\mu\text{m}$ .

The double claws of each leg remarkably difference in size. No cuticular bars on the legs. Primary branch length of leg 1 external claw about 10.0  $\mu\text{m}$  ( $pt=38.17$ ), secondary branch length about 5.0  $\mu\text{m}$  ( $pt=19.08$ ); primary branch length of the internal

claw about 7.4  $\mu\text{m}$  ( $pt=28.24$ ), secondary branch length about 3.3  $\mu\text{m}$  ( $pt=13.60$ ). Primary branch length of leg 2 external claw about 9.2  $\mu\text{m}$  ( $pt=35.11$ ), secondary branch length about 3.9  $\mu\text{m}$  ( $pt=14.89$ ); primary branch length of the internal claw about 7.3  $\mu\text{m}$  ( $pt=27.86$ ), secondary branch length about 4.2  $\mu\text{m}$  ( $pt=16.03$ ).

Primary branch length of leg 3 external claw about 12.7  $\mu\text{m}$  ( $pt=48.47$ ), secondary branch length about 7.1  $\mu\text{m}$  ( $pt=27.10$ ); primary branch length of the internal claw about 8.9  $\mu\text{m}$  ( $pt=33.97$ ), secondary branch length about 4.6  $\mu\text{m}$  ( $pt=17.56$ ). Primary branch length of the posterior claw 4 about 13.4  $\mu\text{m}$  ( $pt=51.15$ ), secondary branch length about 6.2  $\mu\text{m}$  ( $pt=23.66$ ); primary branch length of the anterior claw about 7.6  $\mu\text{m}$  ( $pt=29.01$ ), secondary branch length about 4.6  $\mu\text{m}$  ( $pt=17.56$ ).

Remarks: *It. umbellinae* was found in Brazil, U.S.A. and on the Galapagos Islands (Ramazzotti & Maucci 1983). It is the first report of this species from China.

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